

ABSTRACT

A turbine vane usable in a turbine engine and having at least one cooling system. The cooling system may include at least one convergent flow channel for receiving air from a shroud assembly. The cooling system may also include impingement channels in a leading edge cavity for impinging a cooling fluid against an inner surface of a leading edge of the turbine vane. The cooling system may also include a serpentine cooling path for removing heat from aft sections of the turbine vane proximate to the trailing edge of the turbine vane. The cooling system may also include a divergent leading edge cavity. Exterior film cooling is not needed to safely operate a turbine vane according to this invention.